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EXAMINER
RUDE, TIMOTHY L

ART UNIT	PAPER NUMBER
2871	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/868,364

Applicant(s)

SCHELLHORN ET AL.

Examiner

Timothy L. Rude

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 September 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 26-28, 31-37, 40-44 and 53-60 is/are pending in the application.
- 4a) Of the above claim(s) 53-58 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 26-28, 31-37, 40-44, 59 and 60 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claims

Claims 29 and 38-39 are canceled. Claim 33 is amended.

Election/Restrictions

Examiner appreciates clarification on the correction of a typo in claim 33. Claim 33 will be considered to remain drawn to the same material as the originally presented claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

Art Unit: 2871

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. Claims 26, 43, 27, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kalmanash USPAT 5,211,463 in view of Tatsuaki et al (Tatsuaki) European Paten Application EP 0 798 507 A1.

As to claim 26, Kalmanash discloses [entire patent, especially Figures 6 and 7] a light source element, comprising: a light waveguide, 86; a light exit face, 88, and at least one light entry face, 100, on the light waveguide; a reflector, 96, contacting the face that is lying opposite the light exit face, and at least some of lateral surfaces [surface facing viewer in Figure 7 and surface behind (away from viewer), as well as the lower vertical portions of the left and right surfaces] connecting the light exit face and the opposite surface being covered with reflectors, 104 on left and right, that at least one of reflect and diffusely return light; and the light entry face [concave surfaces, 100] being formed by a part of at least one of the lateral surfaces and the opposite surface not provided with a reflector and being arranged at an acute angle [concave curve has a portion that is at an acute angle – please note Applicant has not claimed planar (flat) surfaces] relative to one of principal directions of extent of the light waveguide.

Fig. 6.

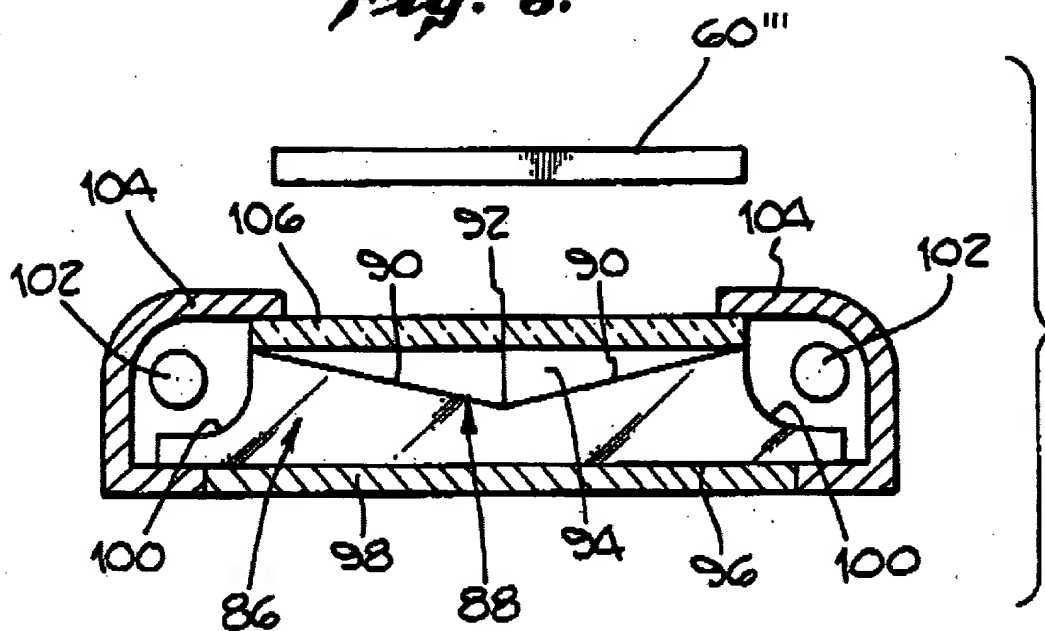
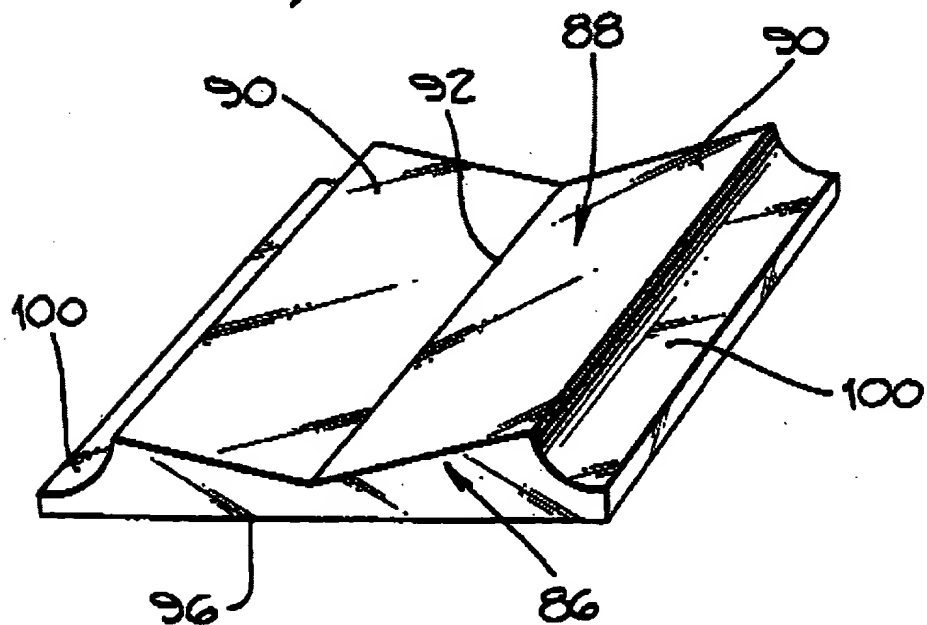


Fig. 7.



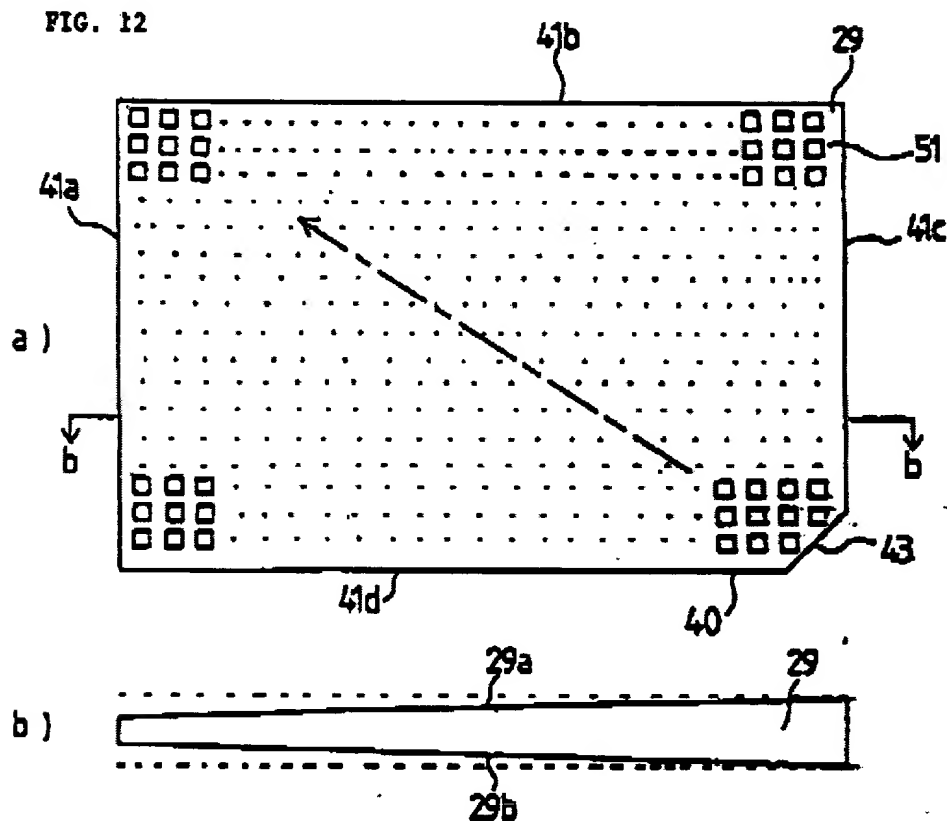
Kalmanash does not explicitly disclose 1) an element wherein at least one of the light exit face and the opposite surface of the light waveguide comprise light-scattering sections and plane sections, and an area ratio of the plane sections to the light-scattering sections along the light waveguide is set such that a uniform luminance of the light source element is achieved or 2) reflectors that contact at least some of lateral surfaces connecting the light exit face and the opposite surface [newly added limitation].

Tatsuaki teaches 1) in Figure 12 the use of at least one of the light exit face and the opposite surface of the light waveguide comprise light-scattering sections and plane sections, and an area ratio of the plane sections to the light-scattering sections along the light waveguide is set such that a uniform luminance of the light source element is achieved to provide improved performance directional light diffusing film [Introduction (57)].

Tatsuaki is evidence that workers of ordinary skill in the art would find the reason, suggestion, or motivation to add at least one of the light exit face and the opposite surface of the light waveguide comprise light-scattering sections and plane sections, and an area ratio of the plane sections to the light-scattering sections along the light waveguide is set such that a uniform luminance of the light source element is achieved to provide improved performance directional light diffusing film.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Kalmanash with the at least one of the light exit face and the opposite surface of the light waveguide comprise light-scattering sections and plane sections, and an area ratio of the plane sections to the

light-scattering sections along the light waveguide is set such that a uniform luminance of the light source element is achieved of Tatsuaki to provide improved performance directional light diffusing film.



Kalmanash teaches 2) the advantage of using reflectors that cover at least some of lateral surfaces connecting the light exit face and the opposite surface to improve efficiency [col. 5, lines 7-16, reflective coating 38].

Kalmanash is evidence that workers of ordinary skill in the art would find the reason, suggestion, or motivation to add reflectors that contact at least some of lateral

surfaces connecting the light exit face and the opposite surface to improve efficiency [col. 5, lines 7-16, reflective coating 38].

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of by adding reflectors that contact at least some of lateral surfaces connecting the light exit face and the opposite surface to improve efficiency [col. 5, lines 7-16, reflective coating 38].

As to claim 59, Kalmanash, as combined above, teaches the advantage of using any of a number of reflective schemes to improve light distribution, e.g., "bottom surface treatments can be used to shape the emission envelope of the wedge block 26 for higher brightness. See Suzawa. These include microgrooves, microbeads [applicant's point matrix], or the inclusion of a light scattering plate. Edgelit panels are usually described as having a reflective coating 38 or material applied to all surfaces except the one in which light is intended to exit in order to improve efficiency." Examiner considers the teaching of Kalmanash to render Applicant's limitation of point matrix obvious to one of ordinary skill in the art as an art recognized equivalent means for the same purpose [MPEP 2144.06 and 2144.07].

As to claim 60, Kalmanash, as combined above, teaches the use of reflective coating on all but the light entry and exit surfaces [col. 5, lines 7-16, reflective coating 38].

As to claim 43, Kalmanash discloses [entire patent, especially Figures 6 and 7] a liquid crystal display [title] with a light source element, comprising:

a liquid crystal element, 60'', arranged at a side of a light exit face, 88, of the light source element;

the light source element comprising a light waveguide, 86, having said light exit face and at least one light entry face, 100;

a surface, 96, lying opposite the light exit face and at least some of lateral surfaces [surface facing viewer in Figure 7 and surface behind (away from viewer), as well as the lower vertical portions of the left and right surfaces] connecting the light exit face and the opposite surface being covered with reflectors, 104 on left and right, that at least one of reflect and diffusely return light; and

the light entry face, 100, being formed by a part of at least one of the lateral surfaces and the opposite surface not provided with a reflector and being arranged at an acute angle [concave curve has a portion that is at an acute angle – please note Applicant has not claimed planar (flat) surfaces] relative to one of principal directions of extent of the light waveguide.

Kalmanash does not explicitly disclose 1) an element wherein at least one of the light exit face and the opposite surface of the light waveguide comprise light-scattering sections and plane sections, and an area ratio of the plane sections to the light-scattering sections along the light waveguide is set such that a uniform luminance of the light source element is achieved or 2) reflectors that contact at least some of lateral surfaces connecting the light exit face and the opposite surface [newly added limitation].

Tatsuaki teaches 1) in Figure 12 the use of at least one of the light exit face and the opposite surface of the light waveguide comprise light-scattering sections and plane sections, and an area ratio of the plane sections to the light-scattering sections along the light waveguide is set such that a uniform luminance of the light source element is achieved to provide improved performance directional light diffusing film [col. 1, line 60 through col. 2, line 5].

Tatsuaki is evidence that workers of ordinary skill in the art would find the reason, suggestion, or motivation to add at least one of the light exit face and the opposite surface of the light waveguide comprise light-scattering sections and plane sections, and an area ratio of the plane sections to the light-scattering sections along the light waveguide is set such that a uniform luminance of the light source element is achieved to provide improved performance directional light diffusing film.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Kalmanash with the at least one of the light exit face and the opposite surface of the light waveguide comprise light-scattering sections and plane sections, and an area ratio of the plane sections to the light-scattering sections along the light waveguide is set such that a uniform luminance of the light source element is achieved of Tatsuaki to provide improved performance directional light diffusing film.

Kalmanash teaches 2) the advantage of using reflectors that cover at least some of lateral surfaces connecting the light exit face and the opposite surface to improve efficiency [col. 5, lines 7-16, reflective coating 38].

Kalmanash is evidence that workers of ordinary skill in the art would find the reason, suggestion, or motivation to add reflectors that contact at least some of lateral surfaces connecting the light exit face and the opposite surface to improve efficiency [col. 5, lines 7-16, reflective coating 38].

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of by adding reflectors that contact at least some of lateral surfaces connecting the light exit face and the opposite surface to improve efficiency [col. 5, lines 7-16, reflective coating 38].

As to claim 27, Kalmanash discloses the light source element according to claim 26 wherein a light infeed unit at an aperture region of a respective reflector is provided at the light waveguide, said light infeed unit comprising a light source, 102, arranged in front of the aperture region such that light radiation emitted during operation by the light source penetrates into the light waveguide with an oblique angle.

As to claim 31, Kalmanash discloses the light source element according to claim 26 wherein the reflectors are integrally connected to one another [as assembled and as integrated by lower reflector, 98, per Figure 6].

3. Claims 35 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kalmanash in view of Tatsuaki and Kalmanash.

As to claim 35, Kalmanash in view of Tatsuaki discloses the light source element according to claim 26 above, wherein the reflectors are one of reflective and diffusely back-scattering.

Kalmanash in view of Tatsuaki does not explicitly disclose the element wherein reflectors are formed of one of a film.

Kalmanash teaches that it is usual for edgelit panels to have a reflective coating [Applicant's film] applied to all surfaces that are not intended to pass light in order to improve efficiency [col. 5, lines 8-16].

Kalmanash is evidence that workers of ordinary skill in the art would find the reason, suggestion, or motivation to add reflectors formed of one of a film to improve efficiency.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Kalmanash in view of Tatsuaki with the reflective film of Kalmanash to improve efficiency.

As to claim 37, Kalmanash in view of Tatsuaki, as combined above, discloses the light source element according to claim 35 wherein at least one opening is formed in the film for passage of light radiation [obvious from the above teaching of Kalmanash].

4. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kalmanash in view of Tatsuaki as applied above in view of Tai et al (Tai) USPAT 6,092,904.

As to claim 36, Kalmanash in view of Tatsuaki discloses the light source element according to claim 35 above.

Kalmanash in view of Tatsuaki does not explicitly disclose the element wherein the film is formed on a base of polycarbonate.

Tai teaches the use of polycarbonate (col. 4, lines 1-15) as an art recognized material suitable for the purpose of making light utilization efficiency improving structures and/or coatings [MPEP 2144.07].

Tai is evidence that workers of ordinary skill in the art would find the reason, suggestion, or motivation to add a base of polycarbonate as an art recognized material suitable for the purpose of making light utilization efficiency improving structures and/or coatings.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Kalmanash in view of Tatsuaki with the base of polycarbonate of Tai as an art recognized material suitable for the purpose of making light utilization efficiency improving structures and/or coatings.

5. Claims 40 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kalmanash in view of Tatsuaki as applied above in view of Suzuki et al (Suzuki) USPAT 5,949,346.

As to claim 40, Kalmanash in view of Tatsuaki discloses the light source element according to claim 35 above.

Kalmanash in view of Tatsuaki does not explicitly disclose the element wherein the film is at least one of coated and printed with white color.

Suzuki teaches [col. 8, lines 1-8] the use of a white coating as an art recognized material suitable for the purpose of making a reflector for a light source element [MPEP 2144.07].

Suzuki is evidence that workers of ordinary skill in the art would find the reason, suggestion, or motivation to add a film that is at least one of coated and printed with white color as an art recognized material suitable for the purpose of making a reflector for a light source element.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Kalmanash in view of Tatsuaki with a film that is at least one of coated and printed with white color of Suzuki as an art recognized material suitable for the purpose of making a reflector for a light source element.

As to claim 42, Kalmanash in view of Tatsuaki discloses the light source element according to claim 27 wherein at least one light source is a semiconductor light-emitting diode (LED).

Kalmanash in view of Tatsuaki does not explicitly disclose the use of LEDs.

Suzuki teaches [col. 3, lines 25-30] the use of at least one light source is a semiconductor light-emitting diode as a light source for low cost and good brightness.

Suzuki is evidence that workers of ordinary skill in the art would find the reason, suggestion, or motivation to add a semiconductor light-emitting diode as a light source for low cost and good brightness.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Kalmanash in view of Tatsuaki with a semiconductor light-emitting diode of Suzuki as a light source for low cost and good brightness.

6. Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kalmanash in view of Tatsuaki as applied above in view of Akahane et al (Akahane) USPAT 5,667,289.

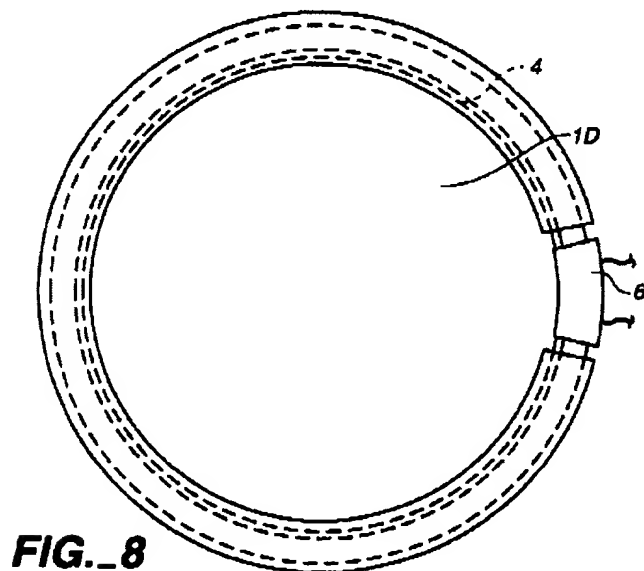
As to claim 41, Kalmanash in view of Tatsuaki discloses the light source element according to claim 26 above.

Kalmanash in view of Tatsuaki does not explicitly disclose an element wherein the light source element forms a closed ring.

Akahane teaches that his light source element can be any of a number of shapes to accommodate different displays including a closed ring per Figure 8.

Akahane is evidence that workers of ordinary skill in the art would find the reason, suggestion, or motivation to add an element wherein the light source element forms a closed ring as an art recognized configuration suitable for illumination [MPEP 2144.07] of a display shape.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Kalmanash in view of Tatsuaki with the element wherein the light source element forms a closed ring as an art recognized configuration suitable for illumination of a display shape.



7. Claims 32-34 rejected under 35 U.S.C. 103(a) as being unpatentable over Kalmanash in view of Tatsuaki as applied above in view of Waitl et al (Waitl) USPAT 5,040,868.

As to claims 32-34, Kalmanash in view of Tatsuaki discloses the light source element according to claim 26 above.

Kalmanash in view of Tatsuaki does not explicitly disclose an element wherein 1) a material of the reflectors is capable of being injection molded and the reflectors are manufactured by injection molding,

wherein 2) a material of the reflectors is formed of a thermoplastic polyester on a base of polybutyleneterephthalate, and

wherein 3) a material of the reflectors comprises Pocan®

Waitl teaches [col. 4, lines 16-55] the use of injection moldable (1) Pocan® (3) [Applicant's polybutyleneterephthalate (2)] to form reflectors for illuminators that have good heat resistance.

Waitl is evidence that workers of ordinary skill in the art would find the reason, suggestion, or motivation to add of injection moldable Pocan® [Applicant's polybutyleneterephthalate] to form reflectors for illuminators that have good heat resistance.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Kalmanash in view of Tatsuaki with the add of injection moldable Pocan® [Applicant's polybutyleneterephthalar] to form reflectors for illuminators that have good heat resistance.

8. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kalmanash in view of Tatsuaki as applied above in view of Sawayama USPAT 6,048,071.

As to claim 28, Kalmanash discloses the light source element according to claim 27 above wherein at least one projection is formed in at least one of at least one longitudinal lateral surface and the opposite surface of the light waveguide, a lateral surface of said projection being covered by a reflector and another lateral surface of the projection lying free toward the outside and forming the aperture region.

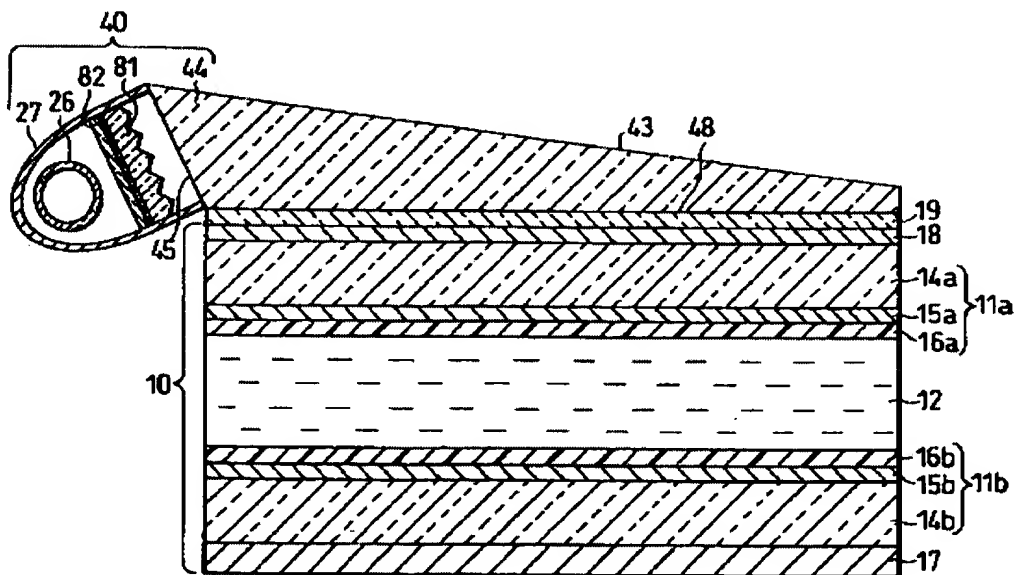
Kalmanash in view of Tatsuaki does not explicitly disclose the element wherein the projection is triangular.

Sawayama teaches the use of a triangular projection for the illuminator in Figure 9 to achieve desired direction of the travel of light to illuminate a display [abstract].

Sawayama is evidence that workers of ordinary skill in the art would find the reason, suggestion, or motivation to add a triangular projection for the illuminator to achieve desired direction of the travel of light to illuminate a display.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Kalmanash in view of Tatsuaki with the triangular projection of Sawayama for the illuminator to achieve desired direction of the travel of light to illuminate a display.

FIG. 9



9. Claim 44 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kalmanash in view of Tatsuaki as applied above in view of Ge USPAT 6,369,867 B1.

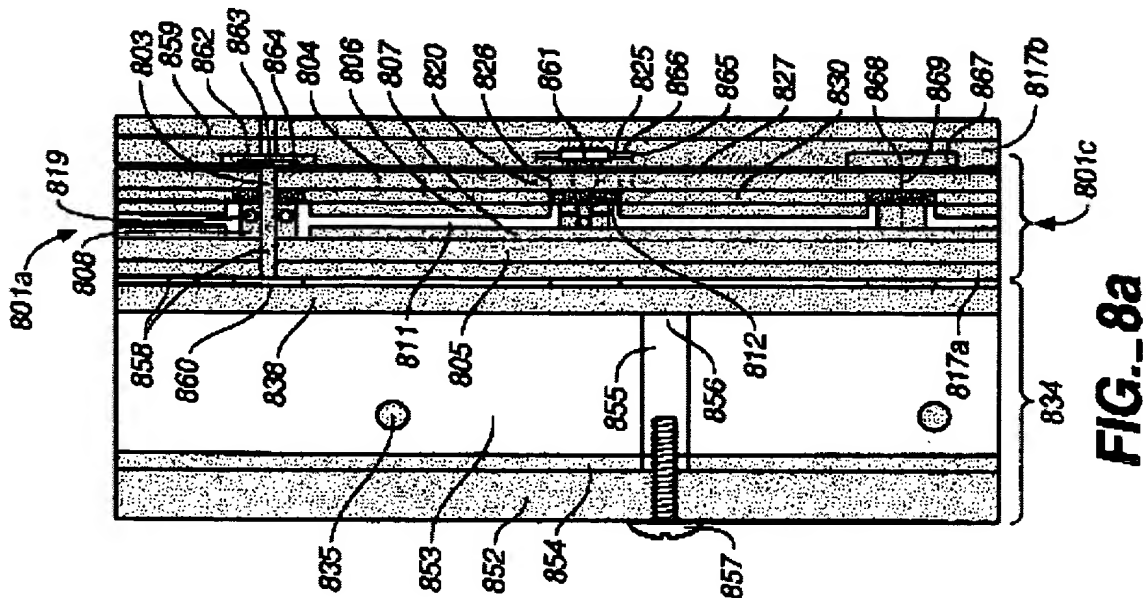
As to claim 44, Kalmanash in view of Tatsuaki discloses the liquid crystal display according to claim 43 above.

Kalmanash in view of Tatsuaki does not explicitly disclose a display wherein the liquid crystal element is held spaced from the light exit face by spacers.

Ge teaches a display wherein the liquid crystal element is held spaced from the light exit face by spacers to provide good strength and support for a diffuser [col. 8, line 63 through col. 9, line 22].

Ge is evidence that workers of ordinary skill in the art would find the reason, suggestion, or motivation to add a display wherein the liquid crystal element is held spaced from the light exit face by spacers to provide good strength and support for a diffuser.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Kalmanash in view of Tatsuaki with the a display wherein the liquid crystal element is held spaced from the light exit face by spacers of Ge to provide good strength and support for a diffuser.



Response to Arguments

Applicant's arguments filed on 21 September 2006 have been fully considered but they are not persuasive.

Applicant's ONLY substantive arguments are as follows:

(1) Regarding base claims, applied prior art does not teach reflectors in contact with lateral surfaces.

(2) Dependent claims are allowable because they directly or indirectly depend from an allowable base claim.

(3) Even though Applicant has not argued rejection(s) of the limitations of dependent claim(s), Applicant has not acquiesced said rejection(s).

Examiner's responses to Applicant's ONLY arguments are as follows:

(1) It is respectfully pointed out that Kalmanash teaches reflectors in contact with all lateral surfaces that are not used as light entry or light exit faces per rejections above.

(2) It is respectfully pointed out that in so far as Applicant has not argued rejection(s) of the limitations of dependent claim(s), Applicant has acquiesced said rejection(s).

(3) It is respectfully pointed out that Applicant must timely respond to examiner's rationale for all rejections. Failure to respond to any rejection rationale consummates acquiescence to said rejection rationale.

Any references cited but not applied are relevant to the instant Application.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy L. Rude whose telephone number is (571) 272-2301. The examiner can normally be reached on Mon-Thurs.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Nelms can be reached on (571) 272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



tlr

Timothy L Rude
Examiner
Art Unit 2871